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28. OBSERVATIONS ON THE FEEDING HABITS OF SOLIFUGAE (ARACHNIDA: SOLIFUGAE) IN SEMARSOT SANCTUARY (M.P.), INDIA

On May 22, 1997, I came across about 20 solifuges. As they were constantly in motion, a precise count was difficult. These solifuges were observed on the border of the Semarsot Sanctuary. They appeared to be hunting for arthropods under a street lamp. The size of the smaller solifuges was about 1 cm while a larger individual was over 4 cm long.

One of the small solifuges was trying to tear open the abdomen of a dead moth with the help of its prominent chelicerae. While it was feeding, all its legs were on the ground and its pedipalps were up in the air. The distal tip of its abdomen was raised upwards and the "head" region was touching the ground. The solifuge appeared to be feeding very vigorously.

The solifuges are known to be very active runners and also rapid consumers of food, which includes many insects such as termites. In captivity, they accept and relish crickets. Prey is caught with a swift snap of their enormous

chelicerae and the vigorous mastication of food is very characteristic of the solifuges. The two scissor-like chelicerae are enormous and project in front of the prosoma. These chelicerae are extremely heavy and are as long as the prosoma in many solifuges. It is probably true to say that Solifugae have the most powerful pair of jaws in the animal world (Savory, 1977).

As I had no intention of collecting and preserving them, I quickly noted down some important features that are useful in at least deciding the genus. As the tarsus of the palp appeared narrow at its base and articulated freely with the tibia, these solifuges could be placed in the family Galeodidae. In India, this family is represented by a single genus *Galeodes* (Pocock, 1900).

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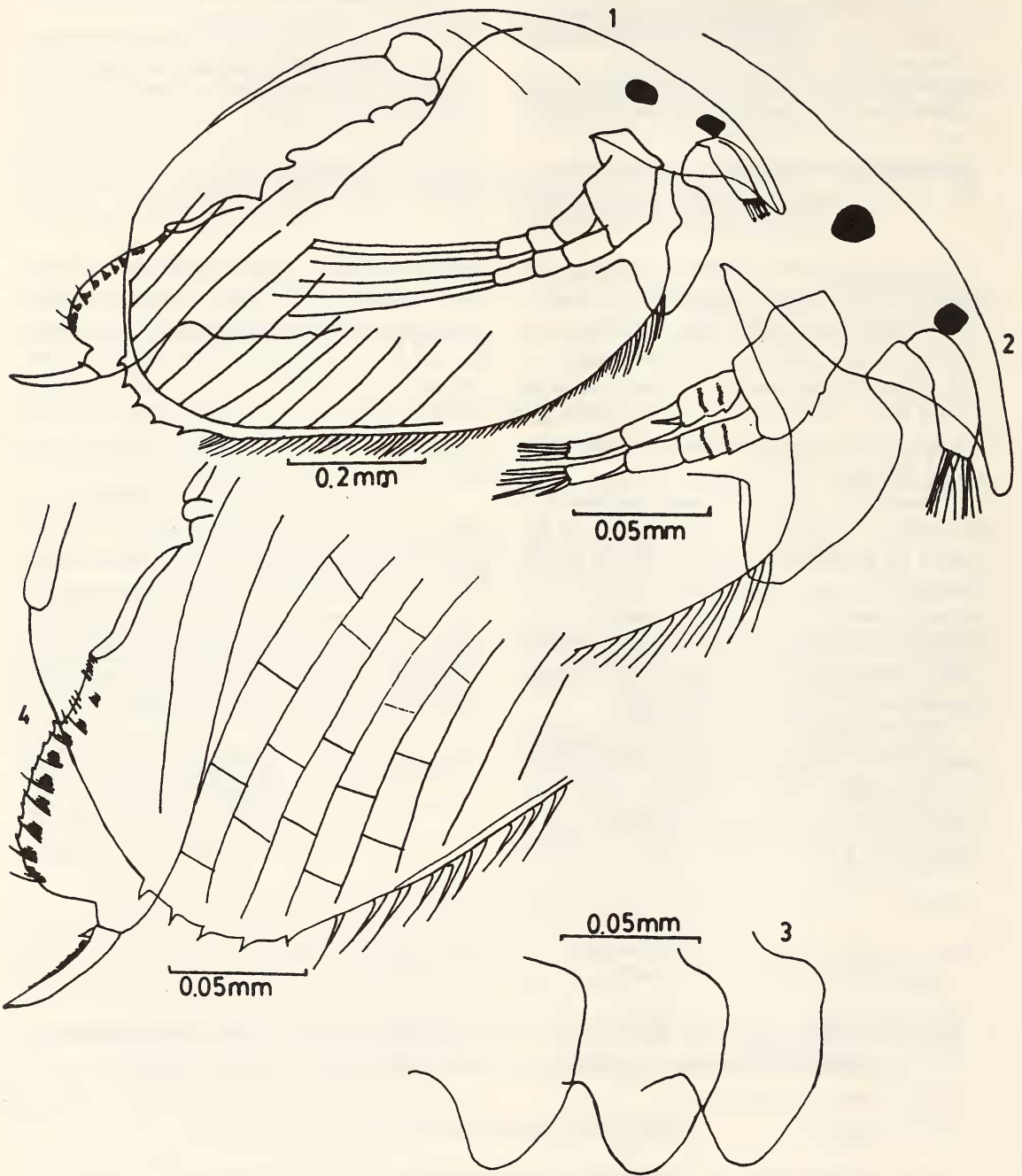
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29. RESURRECTION OF *BIAPERTURA KWANGSIENSIS* (CHIANG 1963) FROM *BIAPERTURA KARUA* (KING 1853) (CRUSTACEA: CLADOCERA)

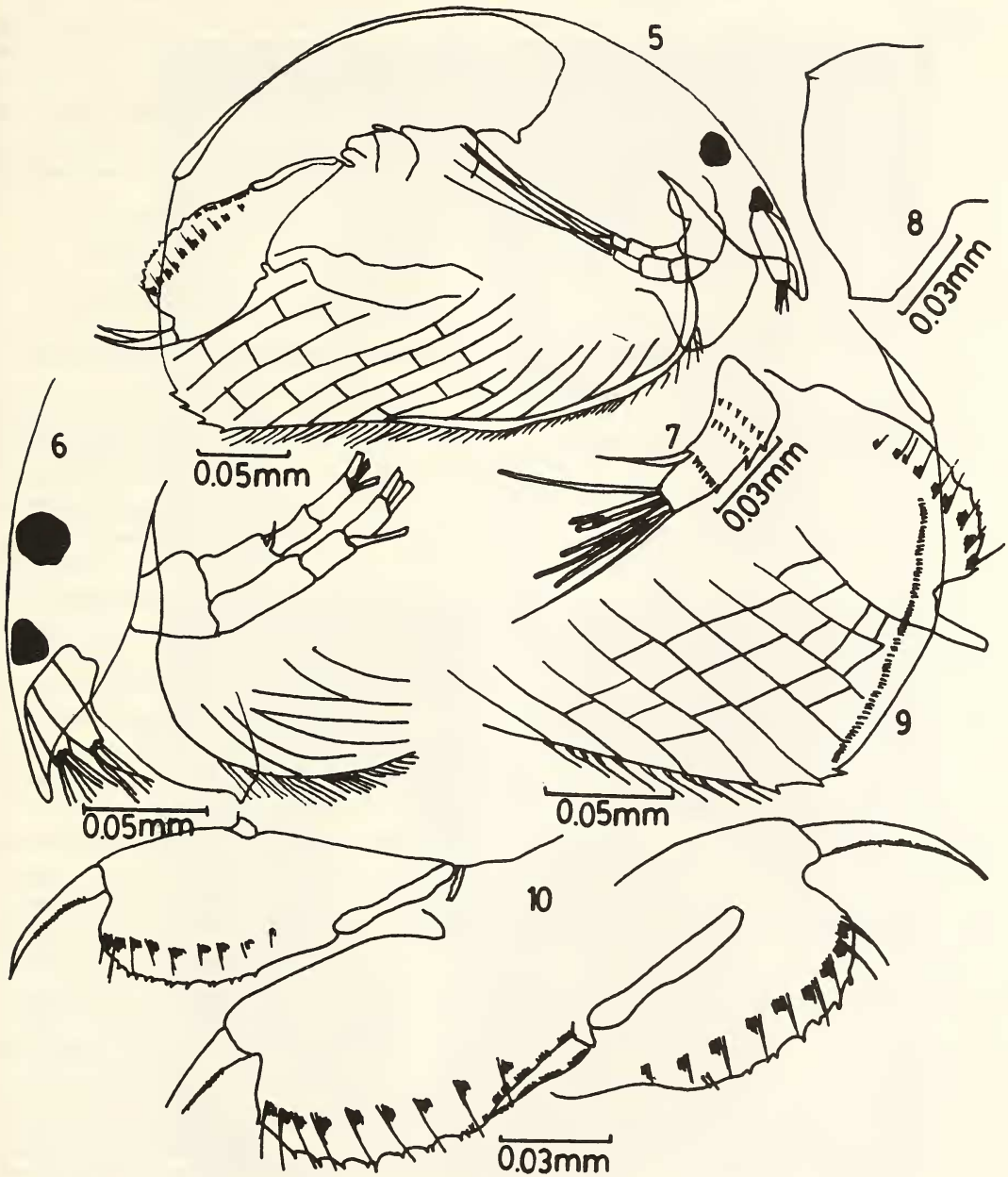
(With ten text-figures and one plate)

The genus *Biapertura* is a relatively small one known so far by five species, of which *B. affinis* (Leydig 1860), *B. karua* (King 1853) and

B. verrucosa (Sars 1901) have been reported from India. Among these *B. karua* is commonly distributed between 40° N lat. and 40° S lat.



Figs. 1-4: *Biapertura kwangsiensis* (Chiang) female: 1 - lateral view; 2 - head, enlarged; 3 - labrum and 4 - posteroventral corner and postabdomen



Figs. 5-10: *Biapertura karua* (King) female: 5 - lateral view; 6 - head, enlarged; 7 - antennule; 8 - labrum; 9 - posteroventral corner and postabdomen and 10 - postabdomen.

(Smirnov, 1974). In India they have been reported from Tamil Nadu (Venkataraman, 1983), Rajasthan (Venkataraman, 1992a), Andaman and Nicobar Islands (Venkataraman, 1992b) and northeastern India (Patil, 1976; Sharma, 1978). Recently, specimens of another closely related species, *B. kwangsiensis* (Chiang 1963), described from China were collected during survey of the wetlands of West Bengal and Tripura State. In 1974, Smirnov synonymised *B. kwangsiensis* with *B. karua*, which was followed by Michael and Sharma (1988). Detailed studies using a scanning electron microscope (SEM) and a close examination of the two species reveal that they are different. *B. kwangsiensis* is reported for the first time from India and is being recorded for the first time since it was originally described in 1963.

B. karua and *B. kwangsiensis* were collected from freshwater ponds, lakes and man-made reservoirs having aquatic macrophytes such as *Hydrilla* sp., *Najas* sp. and *Chara* sp. Both species were collected using a plankton net with circular mouth of 45 cm and 70 μ mesh size. The net was dragged close to the bottom in shallow water among vegetation and the samples were preserved in 5% formalin in the field. *B. karua* was collected from Bagnon jheel, Khasipur Hugla jheel, Shibadaha jheel, Santragachi Bird Sanctuary jheel of Haura district; Dhankuni jheel, Hatgacha jheel, Baluguri jheel and Kanakund jheel of Hooghly district and Amta, Bon-Hooghly, Budge-Budge, Sarisha, Mahestala and Manikpur of 24-Parganas districts of West Bengal; also from weedy ponds of Tilliamura, Manu, Sonamura, Rajnagar, Amarapur and Udaipur of Tripura State. *B. kwangsiensis* was collected from Gholla Krishnanagar Dighi of Hooghly district and Santragachi Bird Sanctuary jheel of Howrah district, West Bengal and Gramtali, a weedy pond of Sonamura and a roadside pond of Amarapur in Tripura State.

Five gravid females of each species were separated and camera lucida diagrams were made

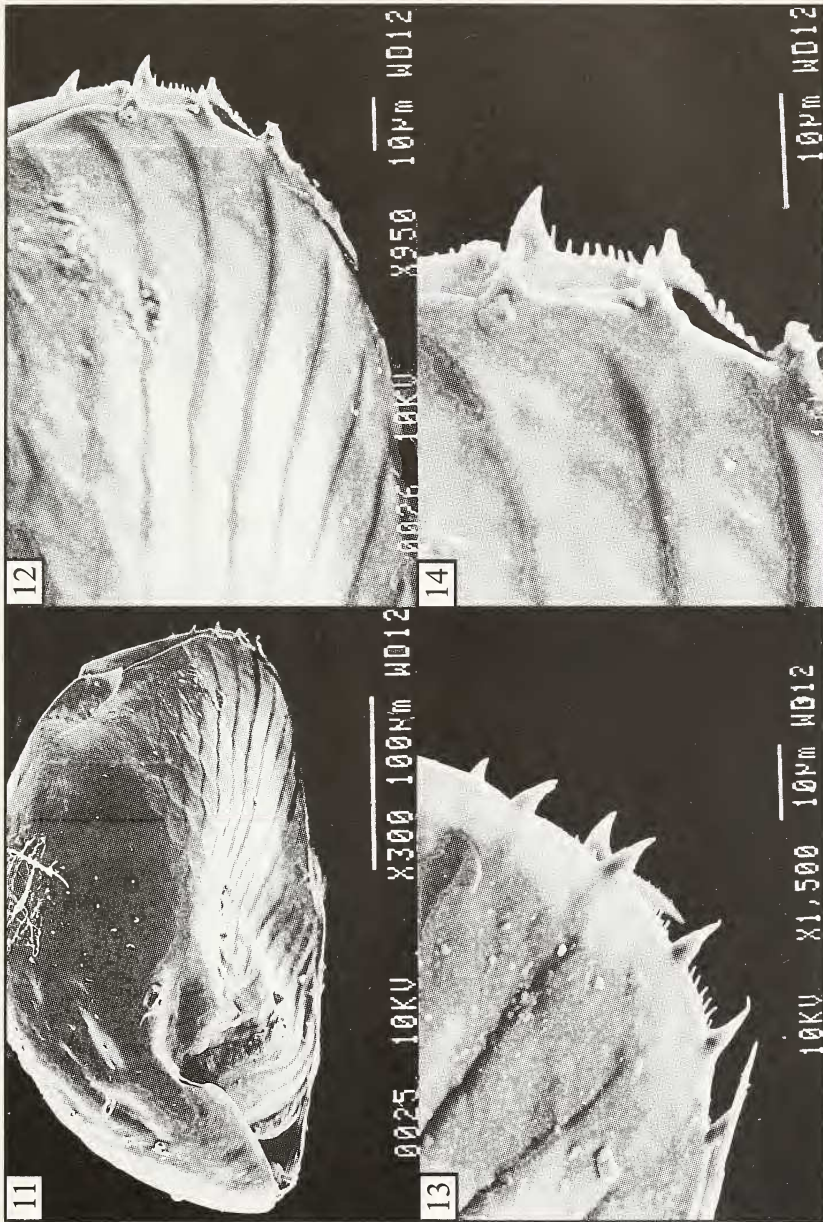
using an ordinary monocular microscope. For SEM studies, at least ten specimens of both the species were separated and dehydrated using different grades of acetone. The air-dried samples were coated with carbon and gold, using a JEE-4x vacuum evaporator and scanned using 10 kv current under a working distance of 12 mm in a JEOL JSM-840A scanning electron microscope.

Order	Cladocera
Family	Chydoridae
Subfamily	Aloninae
Genus	<i>Biapertura</i>

***Biapertura kwangsiensis* (Chiang 1963)**

(Figs. 1-4 and 11-14).

Female: Body size 0.45 mm (n=6), shape oval in outline, maximum height slightly before middle (Figs. 1 and 11). Valves with a series of setae, distinct lines and polygonal patterns. Ventral margin of valves with a series of setae, postero-ventral corner rounded with five denticles attached marginally upto one-third of the posterior region, followed by a row of small spines running dorsally (Figs. 2 and 12-14). Rostrum blunt, antennules not reaching the apex of rostrum. Ocellus slightly smaller than eye, situated closer to the eye than to the rostrum (Fig. 2). Labrum rounded anteriorly, blunt ventrally without a notch on the apex (Fig. 3). Postabdomen with distinct preanal and postanal corners and broadly rounded dorsal margin. About 7-8 denticles attached submarginally, followed by three groups of spines along the anal groove up to the preanal corner. Lateral side with 9 groups of setae, the distal-most setae being the longest and stoutest of each group, always projecting beyond the anal margin. Claw with very short, basal spine close to the base of the claw. Concave surface of claw with five setae in two groups, those in the proximal group longer and ending in a distinctly stouter and longer seta before the middle; distal setae ending some distance before the tip (Fig. 4). Head shield with fine striations on the surface and two connected median pores.



Figs. 11-14: Scanning electron micrographs of *Biapertura kwangsiensis* female:
11 - lateral view and 12 - 14 - posteroventral corner spines enlarged

Biapertura karua (King 1853)

(Figs. 5-10).

Female: Body size 0.32 mm (n=23), shape oval, maximum height slightly before middle (Fig. 5). Rostrum blunt, antennules not reaching the apex of rostrum (Fig. 6). Three groups of unequal sized sensory setae present at the tip of the antennule (Fig. 7). Plate of labrum cup-shaped with a notch on the apex (Fig. 8). Postero-ventral corner of valve with 2-4 denticles, separated from each other by margin of valve and situated at the postero-ventral corner extending upto 1/6 of the posterior side (Fig. 9). Valves striated, postabdomen broadly rounded with 7-8 denticles and followed by 4-5 groups of spines situated along the anal groove. Claw with a very small basal spine situated slightly away from the base. About 9 groups of lateral setae present (Fig. 10).

B. karua and *B. kwangsiensis* usually occur among aquatic macrophytes, however, they are occasionally collected in open water. Specimens of *B. karua* are relatively small, having a mean size ranging from 0.28-0.37 mm (Venkataraman, 1992a; Michael and Sharma, 1988), while *B. kwangsiensis* varies from 0.44-0.53 mm (Sieh-chich and Nan-shan, 1979).

From SEM studies, the two species can be differentiated in the following details: In *B. kwangsiensis*, there are 5 postero-ventral corner

spines which possess secondary spines (Figs. 12-14), while in *B. karua* there are only 2-4 postero-ventral corner spines which are without secondary spines. In addition, the two species differ in the shape of the labrum (Figs. 3 and 8), position of postero-ventral corner spines (Figs. 4-9, 11-14) and position of basal spine on the claw. On the basis of the above differences, the two species are distinct and the name *kwangsiensis* is valid. This is the first record of the occurrence of *B. kwangsiensis* from outside its type locality and it is also the first record of the species from India.

ACKNOWLEDGEMENTS

I thank the Director and Dr. S.K. Tandon, Joint Director, Zoological Survey of India, Calcutta for facilities provided; Officer-in-Charge, M.B.S. Madras for encouragement and Dr. P.T. Cherian, S.R.S. Madras for going through the manuscript. I also thank Dr. N.C. Nandi and Mr. S.R. Das for their help in the field.

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